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ABSTRACT

The purpose of this investigation was to develop a computer-based model for maximizing both the feedback of an administrative "in-basket" simulation exercise and the analysis of the results. The development of the model consisted of three phases: (1) instrumentation, (2) computer interaction, and (3) experimentation and refinement. The study sample of 117 participants consisted of 42 practising and potential elementary school principals, 51 graduate students in educational administration, and 25 potential inner city administrators, the latter group taking part in an urban school administrator training program. A prototype of a model was developed which attempts to move beyond the one-shot, in-basket item format to a more complex and sequenced feedback that efficiently and objectively collects, stores, codes, and selectively disseminates data concerning the participant's behavior. Reliabilities and participants groups with distinct types of administrative performance patterns are reported. (Author/GS)

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A COMPUTER-BASED FEEDBACK MODEL FOR AN ADMINISTRATIVE "IN-BASKET" SIMULATION EXERCISE[1]

by

Gerald R. Boardman

Introduction

One important method employed to simulate tasks of administration is the in-basket.[2] This technique uses items which have actually appeared in the in-baskets of working administrators. Post-participation discussion of the probable consequences of actions taken in response to simulated in-basket items has provided new insights for the practicing administrator in dealing with real situations. However, the in-basket technique has been restricted by the availability of appropriate feedback materials. A review of available feedback materials to in-basket simulation exercises reveals some of their limitations and problems. Two limitations are as follows:

(1) Difficulty in moving beyond the one-shot, in-basket item format to the more complex and sequenced feedback.

(2) Lack of a system to efficiently and objectively collect, store, code, operate, and selectively disseminate data concerning the participant's behavior.

Thus, the primary concern of this investigation was the development of appropriate procedures and methods for maximizing both the feedback of the simulation exercise and the analysis of the results. The above limitations suggested the following question:

> What media are available today through which appropriate sequenced feedback might be presented and within which content might be organized, communicated, and analyzed efficiently and objectively?

One of the most promising medium available to achieve these purposes is the computer. Thus, the following development of feedback materials was based on a model involving a computer-based program.

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[1]This paper summarizes the research reported in Gerald R. Boardman's, A Computer-Based Feedback Model for Simulation Exercises Involving School Administrators, Final Report, Project No. 8-E-167, U. S. Office of Education, October, 1969.

[2]Frederiksen, Norman, D. R. Saunders, and Barbara Wand, "The In-Basket Test," Psychological Monographs, Vol. 71, No. 9 (Whole No. 438), 1957.

The purpose of this investigation was to develop a computer-based model for maximizing both the feedback of an administrative "in-basket" simulation exercise and the analysis of the results. The study had two primary objectives and three secondary objectives. The two primary objectives were (1) to develop a reliable model which would provide a consistent and objective feedback to simulation exercises for school administrators, and (2) to expedite the collection and analysis of data resulting from a situational in-basket procedure. The three secondary objectives were (1) to determine dimensions of performance in the school administrator and, thus, develop a better understanding of the nature of the job of the school administrator, (2) to provide information helpful in the solution of the problem of selecting school administrators, and (3) to provide instrumentation for the preparation and training of school administrators.

Development

The development of the model used in the analysis and feedback of the in-basket simulation materials consisted of three phases:

(1) Identification of items, courses of action, and feedback problems.

The main criterion used to identify items was that the items lend themselves to sequenced feedback. Five such items were identified. Sets of possible courses of actions for each of the items used were identified by going through previously completed in-baskets. The feedback problems corresponding to the identified actions were developed in an advanced seminar in Administrator Behavior.

(2) Development of computer-based analysis and feedback procedures.

After examining responses to the items and the feedback problems, the investigator decided to use the following basic format to analyze the in-basket responses: (a) identify the types of communication used, (b) identify the communication groups and individuals involved, (c) identify the purposes of communication with the groups and individuals involved, (d) identify the courses of action taken, and (e) provide an appropriate feedback problem.

(3) Experimentation and refinement.

In setting up and refining the model, many informal runs of the computer-based model were made using both graduate students and practicing administrators. In addition, two complete pilot studies were conducted and revisions and refinements made.

Design

The final sample consisted of a total of 117 participants. The specific breakdown of the sample was as follows: (1) Administrative Staff Development Group--41, (2) Graduate Students in Educational Administration--51, and (3) Administration Fellows in Urban Education--25. The Administrative Staff Development Group consisted of a group of practicing elementary principals and a group of potential elementary principals in a Wisconsin public school district. The Graduate Students in Educational Administration Group were enrolled in a Department of Educational Administration Administrator Behavior class. The Urban Fellows Group consisted of a group of potential inner-city administrators in residence at the University of Wisconsin as part of an Urban School Administrator Training Program.

The major source of data was the coded information collected by the computer during its interaction with the participant. A tele-typewriter terminal was used as a remote access unit through which the participant could interact with the computer. To assist in the presentation of certain types of data an interaction manual was also provided. Hence, during the analysis and feedback there was a continual interaction between the participant, the computer, and the manual. The computer was the guide for this interaction process.

Thirty-seven scoring categories were used in the data analysis. Principal component analysis, Q-Mode analysis, Pearson Product moment correlations and KR-20 reliability coefficients comprised the statistical analysis. As a reliability check on the participant's interpretation, both the investigator and a reliability scorer evaluated the sets of responses obtained in the final sample of the model.

General Operating Procedures

The next two sections describe the basic operating procedures. First, the general procedure of how the feedback model works is presented. Second, a sample feedback interchange between a participant and the program is given.

How the Model Works:

(1) The basic background structure for the computer-based feedback model was the "Madison School District" elementary in-basket simulation materials. The participant was presented with a set of background materials designed to orient him to the "Madison School District." The materials consisted of a filmstrip entitled, "Madison School and Community" and a packet of written materials providing an introduction to the attendance area, school building, staff, programs and pupils.

(2) The participant assumed the role of an elementary principal and was presented with a simulated in-basket. He was then asked to analyze all of the items presented in the in-basket using the free response technique.

(3) The participant took his original free responses to the in-basket simulation exercises and sat down at a tele-typewriter, which served as a remote terminal for the computer storing the program for the feedback and analysis. To assist in the presentation of certain types of data an interaction manual was also provided. It contained both the basic instructions needed for the use of the computer-based feedback model and the communication groups, purposes of communication, courses of action and feedback items that the participant needed to help in the analysis of his responses.

(4) The participant took his original free responses and interacted with the computer. The computer presented the participant with a set of decision-making questions in regard to his responses. The participant responded and the computer presented another question. This process continued until the participant's responses to the item were completely analyzed. Next, the computer presented the participant with a feedback problem based on the course or courses of action that the participant took in handling the in-basket item. The participant then responded to this problem. This procedure continued until all of the items were analyzed.

(5) The computer presented the participant with a complete and immediate analysis of his responses.

Sample Feedback Interchange

Selective portions of the participant, computer and interaction manual interchange are given below for illustrative purposes only.

Teletype interchange:

```
THIS IS A COMPUTER-BASED MODEL FOR ANALYZING YOUR RESPONSES TO THE
MADISON IN-BASKET SIMULATION EXERCISES.  YOUR COOPERATION IS
APPRECIATED.

ENTER THE ITEM NUMBER OF THE RESPONSE THAT YOU WISH TO ANALYZE.
NUMBER=?
     :6
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ESTIMATE THE TOTAL NUMBER OF WORDS THAT YOU USED.
WORDS=?
     :25
TYPES OF COMMUNICATION--TURN TO PAGE TWO (PART A).
CHOICE(1)=?
     :2
CHOICE(2)=?
     :0
```

Reprint from page 2 of the Interaction Manual

Page 2

Part A IDENTIFY THE TYPE(S) OF COMMUNICATION THAT YOU USED

1. Letter

2. Memo (include any memos or notes to secretary)

3. Telephone Call

4. Face to Face (include any conference or meeting or the intention of such)

5. Note or Memo to self

6. None

Teletype interchange:

```
PURPOSE OF THE COMMUNICATION--TURN TO PAGE FIVE.
CHOICE(1)=?
     :8
CHOICE(2)=?
     :7
CHOICE(3)=?
     :4
CHOICE(4)=?
     :0
DID YOU USE ANY SLANG, COLLOQUIAL LANGUAGE OR FIRST NAMES IN YOUR
COMMUNICATION WITH THE SUBORDINATE(S).
  1.  YES  2.  NO
CHOICE(1)=?
     :2
```

```
DID YOU USE ANY EXPRESSION OR ACT OF COURTESY SUCH AS PLEASE, THANK
YOU, OR SORRY.
  1.  YES  2.  NO
CHOICE(1)=?
     :2
OUTSIDER(S) INVOLVED--PAGE FOUR (PART B).
CHOICE(1)=?
     :7
CHOICE(2)=?
     :0
```

Reprint from page 5 of the Interaction Manual

Page 5

IDENTIFY THE PURPOSE(S) OF THE COMMUNICATION

1. To delegate or transfer the entire problem.

2. To give directions or suggestions (does not include telling secretary to type or mail something).

3. To set us some plans.

4. To make an acknowledgement.

5. To inform or give information (includes giving reminders).

6. To discuss (does not include telling secretary to type or mail something).

7. To ask for an opinion, advice, or permission.

8. To ask for or indicate a need for additional information.

9. To arrange a conference or meeting or to set up a committee.

Teletype interchange:

```
WHICH OF THE FOLLOWING BEST DESCRIBES THE COURSE(S) OF ACTION THAT
YOU TOOK IN HANDLING THIS ITEM.
(TURN TO PAGE SIX)
CHOICE(1)=?
     :7
CHOICE(2)=?
     :0
```

APPROX. HOW MANY DAYS BEFORE ALL OF THESE ACTIVITIES ARE CARRIED OUT.
DAYS=?
:2
TURN TO PAGE 10 FOR THE APPROPRIATE
FEEDBACK ITEM FOR YOUR RESPONSE.

AFTER READING THE FEEDBACK ITEM FOLLOW THE DIRECTIONS
AT THE BOTTOM OF THE PAGE.

POSSIBLE COURSE(S) OF ACTION TO THE FEEDBACK ITEM.
CHOICE(1)=?
:9
CHOICE(2)=?
:8
CHOICE(3)=?
:0

Based on the course(s) of action the participant took in handling the original response, the computer directed the participant to the appropriate feedback item.

Reprint from page 10 of the Interaction Manual

Page 37

Re: Conference with Miss Strawn

Miss Strawn says:

"Mrs. Martin drinks heavily and has been seen on many occasions in Dugan's bar on 9th street. Parents have talked to me about this since they didn't feel they could talk to anyone else."

"I have worked long and hard in this school, and I don't want anyone spoiling the good name of Edison."

For possible responses to this feedback item--See Page 47

Dependent upon the course(s) of action the participant took in handling the original response for item six, other possible feedback items might have been as follows:

(1) Dear Mr. Watkins:

I have not received any reply from you re: my note of August 26. I am usually listened to by my peers and colleagues in education. You will need help with this new principalship and I will certainly be available for advice. If nothing is done about Mrs. Martin, I will go directly to the Superintendent.

Linda Strawn

(2) Re: Communication with Miss Strawn

Says Mrs. Martin is unfriendly, uncooperative, poorly groomed, and selfish. Says that she should not work in the serving line where she deals directly with people.

Also is not in favor of a system of purchasing weekly lunch tickets in the office. Won't be tied to a weekly schedule.

(3) Memo to: Self

Subject: Miss Strawn and/or Mrs. Martin

1. Miss strawn has problems. She has been teaching in the same room for forty years, lives alone, and even made a passing remark recently about committing suicide.

2. Must hostility present between Miss Strawn and Mrs. Martin.

3. Miss Strawn seems to be highly respected by children and parents.

4. General conflict between teachers and non-professional personnel.

(4) Phone call from Rosie Cox:

Says: 1. Much hostility present.

2. General conflict between teachers and non-professional personnel.

3. Several employees demand action or they will resign.

4. Staff feels student supervision must be improved in the cafeteria.

Teletype interchange:

RESULTS OF THE ANALYSIS.
ADMINISTRATIVE PERFORMANCE DIMENSIONS

PREPARATION FOR DECISION	39.5
ORGANIZING WORK	33.8
EXCHANGING INFORMATION AND DIRECTING	41.6
MAINTAINING ORGAN. RELATIONSHIPS	65.1
RESPONDING TO OUTSIDERS	78.6
ANALYZING THE SITUATION	64.8
COMPLYING WITH SUGGESTIONS	34.8
DISCUSSING BEFORE ACTING	45.0

GLOBAL DIMENSIONS

PREPARATION	39.5
RESPONSIVENESS AND COMPLIANCE	55.0

ANALYSIS COMPLETED.
THANK YOU FOR YOUR PARTICIPATION.

The above is an example of the type of administrative style profile that the participant receives from the computer upon completion of the analysis of his responses. The profile scores are presented as percentiles.

Limitations

There were restrictions on the dimensions of performance described by the in-basket scores because any simulation lacks some realism due to the simplications necessary to reduce the variables to practical proportions. In addition, to prevent complexities and detail from clouding major strategy and policy issues and to keep the simulation within the bounds necessary to permit effective analysis and decision-making it was necessary that certain arbitrary rules be imposed.

The main sources of unreliability in the study were the size and type of sample used and the number of items used. Other possible sources of unreliability were inconsistencies in the participant's behavior from item to item, attenuation by any lack of agreement among reliability scores in how the scoring categories should be applied to the responses in setting up the model, and the number of times a scoring category was scored. Additional limitations were imposed in the results of the component analysis because any apparently forced dependencies among categories introduced by the scoring system affect the correlations between category scores and, thus, affect the final results of the component analysis.

Summary

In summary, the investigator developed a prototype of a model which attempts to move beyond the one-shot, in-basket item format to the more complex and sequenced feedback. The system efficiently and objectively collects, stores, codes, and selectively disseminates data concerning the participant's behavior. The reliability of the model both in terms of the scoring categories and the composite components (administrative performance dimensions) was quite satisfactory.

(1) The correlation between the participant's interpretation and the investigator's interpretations over the thirty-seven scoring categories was .67. (The scoring categories with the lowest correlations were the discussing, gives information, and work schedule categories.)

(2) The correlation between the investigator's interpretations and the reliability scorer's interpretation over the thirty-seven scoring categories was .88.

(3) The estimated participant scoring category internal consistency reliability estimate was .27 for the five items used in the computer-based feedback model and was estimated to be .53 if twenty items had been used.

(4) The correlation between the composite component scores based on the participant's interpretation and the composite component scores based on the investigator's interpretation was .69.

(5) The correlation between the composite component scores based on the investigator's interpretation and the composite component scores based on the reliability scorer's interpretation was .92.

(6) The estimated participant composite component internal consistency reliability estimate was .45 for the five items used in the computer-based feedback model and was estimated to be .74 if twenty items had been used.

The few low reliabilities which emerged could be accounted for by either infrequent scoring or lack of problem clarity. The administrative performance dimensions identified in the study were quite similar to those identified by Hemphill, Griffiths and Frederiksen in the Whitman Elementary School Project.[3] The performance dimensions identified were Preparation for Decision, Organizes Work, Exchanging Information and Directing, Maintaining Organizational Relationships, Responding to Outsiders, Analyzing the Situation, Complying with Suggestions, and Discussing before Acting. Two second-order components (global dimensions) were also identified. They were a Preparation for Decision component and a Responsiveness and Compliance component. On the basis of these dimensions along with the first-order dimensions it was then possible on an exploratory basis to identify several groups of participants with distinct types of administrative performance patterns and to establish relationships between these general administrative performance dimensions and some of the background and personal variables.

The groups identified were as follows:

Group 1:
1. ACT (high responsiveness and compliance and little preparation)
2. Emphasis on maintaining relationships (externally oriented)
3. Young
4. Potential administrator
5. High dominance

Group 2:
1. WORK (high responsiveness and compliance and high preparation)
2. Emphasis on internal responsiveness
3. Older
4. Actual Administrator
5. High experience and graduate credits
6. High dominance

Group 3:
1. DO NOTHING (little responsiveness and compliance and little preparation)
2. Emphasis on analyzing the situation
3. Older
4. Potential administrator

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[3] John K. Hemphill, Daniel E. Griffiths, and Norman Frederiksen, Administrative Performance and Personality, (Bureau of Publications, New York: Teachers College, Columbia University, 1962).

Group 4:
1. PREPARE (little responsiveness and compliance and high preparation)
2. Emphasis on preparation and organization
3. Older
4. High academic
5. Low dominance

Group 5:
1. ACT (high responsiveness and compliance and little preparation)
2. Emphasis on responsiveness (higher on external responsiveness than internal although above average on both)
3. Younger
4. Actual administrator
5. High academic, professional training and graduate credits

It is hoped that others who are interested in computer simulation will find the model presented in this study useful in providing a basis for the development of additional and improved kinds of computer-based feedback and analysis of simulation materials. In addition, it is hoped that the administrative performance dimensions identified in this study will provide a framework that will be useful in obtaining new information about administrative decision-making behavior and the cognitive and affective context in which it takes place. Also, emerging from the model were some implications for the practice of administrators. Success in determining the dimensions of the performance of school administrators (such as the dimensions identified in this study), and the development of knowledge within these dimensions as related to other performance characteristics, suggests some discriminating procedures for the selection of school administrators. A second practical application was in the preparation and training of school administrators. The instrumentation in this study included a model for the interaction and feedback of situational in-basket simulation exercises. This model offers the participant practical experiences in both decision-making techniques and in computer applications.